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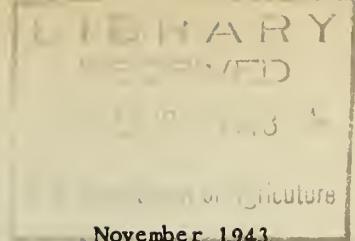


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WAR FOOD ADMINISTRATION  
Food Distribution Administration  
Washington, D. C.



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DISCUSSION GUIDE ON FOOD CONSERVATION  
FOR USE BY WOMEN'S GROUPS

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Every American has a place in the job of making food fight for freedom. The conservation of food for the needs of our armed forces, our allies, and the home front will require the services of every man, woman, and child.

Eliminating all possible means of waste is the challenge presented to the American housewife today. Analysis of food studies shows that on the average each one of us throws out 225 pounds of usable food each year; that we waste 15 percent of all food that is brought into the home.

Every method of saving food should be carefully studied in an effort to reduce this appalling waste. The following pages present some facts and ideas relating to these problems. They do not, however, cover the subjects completely because much food waste is a direct result of local conditions and food customs.

The discussion material which is presented here lends itself to two different kinds of use: (1) to serve as a basis for a series of sessions devoted especially to the problem of reducing food waste, or (2) to provide a number of separate topics which could be introduced at 10- and 15-minute intervals during regular meetings.

The topics are presented in question and answer form for the purpose of stimulating discussion in which every woman will contribute ideas for saving food.

## TOPIC I: MEAL PLANNING

Lack of sound planning is responsible for as much if not more waste in the home than any other single factor. Custom and habit play too large a part in guiding the meal planning of many homemakers, and are responsible for considerable loss of food. Use of the newer information and scientific knowledge of meal planning will help materially to reduce food waste. Planning meals for the week also will save time in marketing, energy in preparation, and food in cooking and serving.

Leader: What are some of the necessary factors in meal planning?

Answer: Meals should be planned according to nutritional standards, the weather, family activities, and seasonal foods, and to balance texture, color, and flavor of food.

### A. Nutritional Standards

Leader: Why should we plan our meals according to nutritional standards?

Answer: Following the nutrition rules protects our health. Every member of the family will be assured each day of his quota of the right food that will contribute to health and energy. The foods essential for good health are grouped into seven units.

Leader: What are they?

Answer: Group 1, Green and yellow vegetables.  
Group 2, Oranges, tomatoes, grapefruit, raw cabbage, or salad greens.  
Group 3, Potatoes and other vegetables and fruits.  
Group 4, Milk and milk products (cheese).  
Group 5, Meat, poultry, fish or eggs, or dried beans, peas, nuts, or peanut butter.  
Group 6, Bread, flour, and cereals.  
Group 7, Butter and fortified margarine.

Leader: How do we use the Basic 7 as a guide for planning meals?

Answer: Make sure that at least one food from each of the seven groups is represented on every day's menu.

Leader: What other benefits are derived from the use of the Basic 7 in menu planning?

Answer: The family (1) will be provided with a safe allowance of essential food materials; (2) will establish a procedure for correct eating habits; (3) will obtain the greatest nutritional value from food.

Leader: Write a day's menu including the Basic 7 and check with the Basic 7 chart. Here is a sample menu:

<i>Breakfast</i>	<i>Lunch</i>	<i>Dinner</i>
Tomato juice	Creamed dried beef on	Lima beans, creole
Enriched farina with milk	mashed potatoes	Buttered greens
Scrambled egg	Cabbage and green-	Creamed onions
Whole-wheat toast	pepper slaw	Raw carrot strips
Coffee	Enriched rolls	Whole-wheat bread
	Fruit	Apple pie
	Oatmeal cookies	Milk

(Continue the class discussion with a consideration of menus based on foods within the Basic 7 group that are currently available in your community. Stress use of foods of which there might be a temporary local surplus. Show how use of these foods might be increased while maintaining a balanced menu.)

It is estimated by nutritionists that Americans waste more than 380,000,000 pounds of cabbage every year by stripping off the outer leaves and discarding the core. At least half of this waste is edible food. This is enough for the year-round cabbage supply of the combined populations of New York and Paris.

### *B. Seasonal Foods*

Meal planning needs consideration from many angles. When we have a surplus of perishable foods in the market we may be tempted to overbuy, unless we plan specifically for this increased use. Studies show that Americans throw away an average of 3/5 pound of food daily the year-round. In the month of August, fruits and vegetables fill our garbage dumps to the amount of 75 out of every 100 pounds of discarded food products.

A careful survey of waste habits caused by excessive supplies will reduce waste and avoid family complaint of having to eat the "same old thing."

**Leader:** What is one way to avoid loss of food in the purchase of seasonal foods?

**Answer:** Figure the exact needs of your family before you buy perishable products. Plan each dish in terms of servings actually needed.

**Leader:** What precautions should be observed in storage of perishables?

**Answer:** Limit purchase to the amount of food that you are certain can be properly stored and used. If seasonal foods need cold temperature, gage carefully your storage space.

**Leader:** How can we avoid waste of food when the family refuses to eat continued servings of the same food?

Answer: Families tend to grow weary of the same food unless its appeal is enhanced by novelty and appetizing appearance. Seasonal foods can usually be served in a variety of ways. Some vegetables can be served raw, cooked, or in combination with other vegetables. Surplus fruits can be baked, or stewed as desserts, or used in salads or in puddings. Waste can be reduced if "new dishes" are prepared in small quantities while one is experimenting with family taste and acceptance.

Leader: Give a series of new recipes on seasonal foods:  
Berries, other fruits, vegetables and new combinations.

Answer: (Each woman in the group presents one of her favorite recipes for perishable foods in seasonal abundance at the time.)

When we pare potatoes or discard peelings from baked potatoes, we waste at least 1/10 of their bulk and much of their iron and vitamins. On this basis it is estimated that America's 34,000,000 housewives last year wasted more than 24,600,000 bushels of potatoes.

### C. Weather

Leader: Why is weather an important factor in food conservation?

Answer: Sudden changes in the weather, especially on the warm side, account for much food waste.

Leader: What is the chief food waste in hot weather?

Answer: Milk or cooked foods containing milk are the chief source of spoilage due to heat. Return to refrigerator immediately, all milk and milk foods that remain after serving.

Leader: Plan a menu for a winter day and rearrange the same menu for a warm day, showing appropriate changes. For example: For dinner, if soup stock is on hand, a jellied soup can be prepared in place of hot soup. Vegetables cooked in the morning can be tossed into a salad at night. If a meat dish is used, it should be prepared for nutritional and appetizing appeal; whether it is served hot or cold depends upon the kind of meat and the family taste. A dessert such as fruit puddings planned for cold days can be simplified by serving the fruit alone when days are warm.

(Continue the discussion with consideration of how to prepare nutritionally adequate meals with increased use of foods especially adapted to the season, and with a reduction in food wastage.)

*D. Family Activities*

Leader: How is food waste caused by variations of family activities?

Answer: Growing children and members of the family using muscular effort generally have appetites in proportion to their activities and require large servings of food. Waste can be avoided, however, if portions are smaller to the members of the family who require less food, due either to more sedentary occupations or to smaller appetites.

Leader: Why is age an important factor in meal planning?

Answer: The diet of very young children and of the aged is essentially the same. The amount of food eaten by elderly persons is considerably below that consumed in middle age. A saving of food can be accomplished by planning meals to meet the needs of respective members of the family.

Example: Carrots served to the family can be pureed for the young child.  
(Members of the course might give other examples.)

Leader: How can waste be avoided in the diet of pregnant women, nursing mothers, and convalescents?

Answer: Diet should be planned for ready digestion, appetizing appeal, and should consist of essential foods, plainly and simply cooked.

*E. Balance in Food Texture, Color, and Flavor*

When combining foods in a menu the meal planner should observe those factors which influence appetite appeal and make the family satisfied with the appearance and flavor of food.

Question: How can we obtain tasty and attractive combinations of foods?

Answer: By planning wholesome, nutritious meals according to a few simple rules.

Question: Give examples of this type of planning.

Answer: Meals should be planned with foods that

1. Appeal to the eye
2. Stimulate the appetite
3. Satisfy hunger

Question: When planning menus how can we select foods that taste and look well together?

Answer: Use your imagination to see how food will look when served and taste when eaten. Such forethought will save many an unpalatable meal from being cooked, served, and perhaps largely wasted.

Visualize, for example

This menu is colorless, soft; has poor form and texture and no distinctive flavor.

as against - Colorful foods - Contrast of texture in these courses.

Lamb stew  
Dumplings  
Stewed corn  
Bread and butter  
Custard  
Milk or coffee

Lamb stew  
Green peas and carrots  
Parsley buttered  
potatoes  
Green salad  
Bread and butter

Question: How can we balance flavor in the menu?

Answer: When using a bland or mild-flavored food add a savory sauce or a contrasting food to achieve balance in flavor; enhance the flavor of a neutral food with an acid one. Example: boiled beef and horseradish sauce; baked fish with lemon sauce; macaroni and cheese with tomato salad; boiled custard over sliced oranges.

Leader: What are some foods that contrast in texture?

Answer: When serving soft foods as a main course, always contrast with a crisp, crunchy one. At least one food in the menu should be crisp. Example: carrot sticks or crisp slices of white turnips or yellow rutabagas add texture to the meal and food values as well.

Question: Give examples of menus planned according to texture, color, and flavor.

Answer: Codfish cakes with egg sauce, boiled potatoes, scalloped tomatoes, carrot strips. Or scalloped oysters, baked potatoes, cabbage, and tomato salad.

Leader: How can a plate of food be made to appear appetizing?

Answer: Vary the shapes of food served on a plate; avoid having several mounds of food, or two or more squares on one plate. Example: chicken patties and a scoop of mashed potatoes.

Leader: What are some examples of good color arrangement in food?

Answer: Combine color harmoniously. Use yellow, green, or red food to contrast with white or neutral colors. Avoid serving a colorless combination such as baked white fish, mashed potatoes, and creamed cabbage. Chard may be substituted for the cabbage to give a green color accent to this plate.

Leader: What seasoning do you suggest for bland or milk-flavored foods?

Answer: Tomatoes, onions, green peppers, celery, and herbs.

(Continue discussion with members of the group by having them suggest methods they use to brighten drab foods for better eye and appetite appeal.)

## TOPIC II: PURCHASE AND PREPARATION

## A. Buying at the Retail Market

Leader: How can we save food when we market?

Answer: It's a temptation to overbuy fresh vegetables. We must consider (1) the degree of ripeness; (2) the keeping qualities; (3) the amount of storage space available; (4) the size of the family appetites. Buy only what we are certain can be used.

Leader: How can we help the grocer save food?

Answer: Much food wastage occurs when customers thoughtlessly pinch the oranges, apples, grapes, plums, melons, lettuce, etc. Let's use our eyes instead of our fingers to select fresh produce.

Leader: How can we save food in self-service stores?

Answer: If we are careful when we weigh our produce in self-service stores to avoid taking more than we want, it won't be necessary to put back some potatoes or onions or oranges on the stock pile. When it is necessary, let's place them back carefully—and not toss or drop them. It's our responsibility to keep the food fit for someone else to buy.

Leader: Should we refuse to buy slightly blemished fruits and vegetables?

Answer: When food was plentiful we got into the habit of being "choosey." Now we must share our "plenty" with others—and we must learn that the dents in the oranges, or the soil on the potatoes, do not affect the food value.

Leader: How can we help the grocer dispose of surplus?

Answer: If, when we do our marketing, we keep our minds open to suggestions from the grocer we can make a big contribution toward saving food. Let's be willing to change our menu if the grocer suggests a substitute of a product of which there is a local surplus. When we can't get what we want let's take cheerfully what we can get.

Leader: Should we expect the grocer to trim and sort his fruits and vegetables as he did in pre-war days?

Answer: The grocer, too, is trying to save food and we must modernize our demands on him. We should buy the lettuce with the outside leaves on it, wash and use all the leaves. Outer leaves can be shredded and used for salads.

Leader: What is the disadvantage of buying on week ends?

Answer: If possible, place your buying when your grocer is the least busy. Let's try to arrange shopping for the time when supplies are the most plentiful and the grocer has time to help us.

It is estimated that 6 to 10 percent of all fresh fruits and vegetables are wasted in retail stores - partly because of customer carelessness. Food wastage in retail stores in 1942 is estimated to have cost 450 million dollars. This is worth saving!

#### B. Preparation

Leader: How can food wastage be reduced during the preparation of a meal?

- Answer 1. Potatoes and carrots can be well scrubbed and cooked with the skins on. If desired the skins may be eaten or removed after cooking. They contain additional food value which we need.
2. The skins of vegetables such as carrots, cucumbers, and radishes are colorful and good to eat raw. Reach for the scrub brush instead of the knife.
3. Fruits such as apples, pears, and peaches need only washing and careful coring. We should not throw away minerals and vitamins in skins.
4. We should be more careful how we trim outside leaves of lettuce and cabbage heads. Wash, cut, and use in a tossed salad. The green lettuce leaves have more vitamin A than the bleached lettuce.
5. The tops of beets which we often toss out are good, edible greens. Wash them and cook like any other greens. Celery leaves, fresh and dried, are excellent seasoning for salads, meat loaves, dressings, sandwich fillers, and soups.
6. When meat can be cut from the bones before serving it the bones can be cooked with the meat scraps to make stock for soups, stews, and gravies.
7. Juices from canned vegetables must never be thrown away. They can go into soups, stews, and gravies.
8. Juices from canned fruits, as every one knows, are delicious in molded salads or desserts. They are fine for beverages. Plain or thickened with cornstarch they make good sauces for puddings and custards. Slightly dry cake and cookie crumbs served with a fruit sauce or boiled custard make delicious desserts.
9. If vegetables are cooked in a very small amount of water and are not overcooked they lose less of their vitamin and mineral content and also look more appetizing. If the liquid which is left is served with them or is used in gravies or baked dishes, little food value is lost.

Answer 10. All protein food such as eggs, cheese, and meats, must be cooked slowly because it makes the food more appetizing and in the case of meat it prevents shrinkage.

11. If a particular food such as kidney beans was not popular at one meal, try new ways of preparing and serving it, such as chili, salad, baked with meat and vegetables, etc. This is particularly true of seasonal foods which are plentiful and reasonably inexpensive, such as tomatoes or other local produce.

12. If a food is to be eaten it must both look good and taste good. Hot foods must be served hot; cold foods served cold.

13. Timing is important in preparing a meal because the meat that gets cooked long before the potatoes are done will become hard and dry - and is much more likely to be wasted on the individual plates.

14. The quantity of food served is important if food isn't to be wasted. Appetites and likes and dislikes of the family must be taken into consideration and each person served only what he will eat.

It would take 127 Liberty ships to transport the 24,600,000 bushels of potatoes that are pared away and discarded every year.

### C. Left-overs

Let your imagination and the spirit of adventure guide you in the use of left-overs. Many delightful dishes can be made from left-overs, as their varied combinations create appetite appeal. Save all portions of left-over food, place in covered containers in the refrigerator, and use them as soon as possible. Left-over vegetables are best used in salads, as reheating cooked vegetables tends to destroy vitamins. Careful planning of the use of left-overs will reduce kitchen waste.

#### Baked

Beans: In soup, salads, chili, sandwiches.

#### String

Beans: In vegetable salad ring, with scalloped vegetables; added to vegetable soup; in spring salad.

#### Spinach:

In vegetable soup; in salad ring; with scalloped vegetables; in spinach puree; in ham and spinach souffle; in spinach nests with creamed mushrooms.

#### Rice:

In rice and raisin delight; in rice and nut pudding; in Spanish goulash; in rice pudding; rice cakes, meat balls.

#### Sliced

Tomatoes: For garnishing meat loaf; baked in meat pie; used in chili; in Spanish goulash; in vegetable casserole.

Cabbage: Cole slaw made over into a hot slaw; boiled or creamed cabbage added to vegetable soup; with creamed vegetables.

Carrots: In meat pies; added to vegetable soup; creamed with peas; in vegetable salad ring; in spring salad.

Beef: As baked hash; scalloped; sliced cold; added to vegetable soup; in stuffed green peppers; in Irish stew; in chili.

Ham: In croquettes; in meat loaf; with noodles; baked with macaroni in casserole of ham; with scrambled eggs; in sandwich filling; used and added to creamed mushrooms or creamed eggs.

Bread: As French toast; as toast sticks; as cinnamon toast; in onion dressing; buttered crumbs for scalloped dishes; in fig bread pudding; in English plum pudding; in prune pudding.

Give your special left-over recipe for each food item.

*D. Revised Table Customs*

Pre-war notions of what constitutes "good manners" are the cause of much waste of food. Good manners in either a wartime or peacetime conservation program means eating all the food we take on our plates.

Leader: Give examples of conservation table manners.

Answer:

1. Squeeze the grapefruit dry.
2. Eat all the meat from chop and chicken bones. Don't be afraid to pick the bones.
3. Eat all the bread that has been broken or crumbled.
4. Get the last spoonful from the soup bowl, tipping it, if necessary.
5. Use bread to soak up the gravy.
6. Don't overload plates of guests and children.
7. Eat the lettuce, parsley, and water cress garnish.
8. Use a bread pusher to get the last bits of food on your plate.
9. Don't force guests to take second helpings or dishes that are not desired.

Leader: Give other examples of "new" table customs that will save food.

## Conservation Do's and Don'ts for the Hostess

## Do's

1. Experiment with types of serving until you find the way that saves food most satisfactorily: (a) plates served in kitchen; (b) host serving at table; (c) food passed from person to person.
2. Invite your guests to join the Clean-Plate Club.
3. If butter is cut into small pats it may discourage the guest who might take too much.
4. Cut bread in halves or even quarters before putting it on the table.
5. Educate your family to eat whatever you serve them, then cooperate in the serving so they really do!

## Don'ts

1. Avoid wasting soups and beverages by serving only enough in the bowls and cups so the contents won't splash over the sides.
2. Don't urge anyone to overeat just in order to get rid of the last few spoonfuls of food. (Be ingenious in using the left-overs next day.)
3. If your main course includes the calories, vitamins, etc., that your family needs, why serve a dessert? If you do serve a dessert, make it a part of a well-balanced meal, so it will take the place of some other foods.

## TOPIC III: STORAGE

The major step in reducing the estimated 15 percent waste of food in the home is in improving storage methods. Saving of food and food values can be effected by careful preservation on the pantry shelf, in the storage cellar, and in the refrigerator.

**Leader:** All foods must be stored once we have them in our kitchen. How many methods of storage do we usually employ for our food?

**Answer:** There are three types of storage: Dry storage; cool, moist storage; and cold storage.

**Leader:** What are the correct methods of storing food?

**Answer:** Dry storage for cereals, flour, sugar, salt, dry beans and peas, macaroni, noodles, and other similar foods.

Leader: What storage method should be used to protect these foods?

Answer: As "staples" are usually sold in packaged form, they should be placed when opened in tightly covered containers to protect them against dust, weevils, and other cupboard pests.

Leader: What foods do we place in cool, moist storage?

Answer: Potatoes, beets, onions, turnips, cabbage, and other similar vegetables, and apples and pears require this kind of storage.

Leader: What happens to such vegetables and fruits if they are stored where it is too warm?

Answer: Some of the vegetables begin to sprout; other vegetables, and the apples and pears, wither and rot.

Leader: List the perishable foods and explain why they spoil easily.

Answer: Perishable foods are milk, meat, butter, certain vegetables, fruits, and most "left-overs." Foods that contain moisture spoil more readily than others.

Leader: How should meat be stored?

Answer: Fresh meat should be kept in the meat tray or loosely wrapped in waxed paper and placed below the freezing unit. Fresh meat, if not frozen, keeps best in the meat or de-frosting tray. Cover lightly with waxed paper or damp cloth. Leave ends open for free air circulation. Wrap and freeze ground and variety meats if they are not used the same day as purchased. Keep meat broth and cooked meat covered and stored in refrigerator until ready to serve.

Leader: What should be done about cured meats?

Answer: Keep uncooked, well-cured meat in a dark, cool, dry, airy place. Leave wrapping on ham and bacon until ready to cook. Precooked and "tenderized" ham should be stored in the refrigerator.

Leader: How should fish be stored?

Answer: Fish should be cooked within 24 hours after purchase. Wrap in waxed paper to prevent spread of odor, and store in freezing unit.

Leader: What are the proper storage methods for poultry?

Answer: Wash carefully; pat dry, sprinkle inside with salt. Wrap in waxed paper and clean towel and keep very cold until time to cook.

Leader: What are the methods of storing dairy products?

Answer: Wash outside of milk and cream bottles before placing in refrigerator. Place on top shelf next to freezing unit. Pour left-over milk or cream into a covered glass or pitcher. Dried milk will keep longer as will opened cans of condensed and evaporated milk if stored in refrigerator. Store butter and "soft" cheese should be placed in a covered container; wrap hard cheese in waxed paper or place in covered jar. Eggs should be placed in the refrigerator in the carton in which they were purchased or transferred to a bowl or egg basket. Such precautions help to keep eggs fresh and to prevent loss of moisture. Do not wash the eggs before storing as there is a protective coating on the shell that also helps to keep the moisture in the egg.

Leader: Will you offer suggestions for storing vegetables?

Answer: Wash vegetables and shake off excess water. Store in vegetable tray, hydrator, oiled silk bag, or in tightly covered pan. Vegetables should stay crisp and fresh if they are tightly covered. If they are stored uncovered, they wilt and lose vitamins as well as crispness. Pile vegetables loosely in pan to prevent bruising and quick spoilage. Save usable trimmed outer leaves for use in soups or salads.

Leader: How should oranges, lemons, and grapefruit be stored?

Answer: These fruits should be spread out to prevent mold and rot and kept in a cool place.

Leader: What care should be given to other fruits?

Answer: Be gentle in handling all fruits to prevent bruising them. Berries, cherries, and grapes should be stored in a shallow tray in a cold place and washed just before using. Peaches, pears, and plums also should be spread to keep from bruising. Keep the ripe fruit cool. Let underripe fruits ripen at room temperature.

Apples soften as much in 1 day at 70° F as in 2 days at 50° F., so keep them at the cooler temperature.

The natural sugar in dried fruits keeps them from molding easily. Store them in a tight bag or jar in a cool place. During summer months store in refrigerator.

Leader: How can we keep bread from molding?

Answer: Cool home-baked bread before storing it in a ventilated box. In hot, humid weather, to keep bread from molding, wrap it in moisture-proof paper and put in refrigerator. Crisp cookies and crackers soften if kept with bread and cake. Keep them in airtight tins or boxes by themselves.

Leader: Is there any rule for the storage of canned goods?

Answer: Keep dry and reasonably cool to prevent rust and spoilage. Canned milk should be turned over every 2 weeks.

Leader: There are so many things to think about in planning, buying, and serving food. Is there any published material which shows how to combine foods so as to give proper nutrition and how much we should buy and serve our families to avoid waste?

Answer: A publication entitled "Family Food Plans for Good Nutrition" contains this information and may be obtained by writing the Office of Information, U. S. Department of Agriculture, Washington 25, D. C.

To produce the 24,600,000 bushels of potatoes pared away last year required nearly 13 million man-hours of labor—the labor of 5,000 men working a 48-hour week the year-round.

#### TOPIC IV: APPENDIX A

##### FACTS ON FOOD WASTE

Discussion leaders who use this material will probably find that members of their group know how much food is being wasted in the United States every year. They may wish to devote a meeting to discussion of the sources, kinds, and amounts of food wastage. Or they may find it more useful to present parts of this information at the opening of each discussion period on how to reduce waste.

The data given here indicate the extent of the problem and the size of the food-saving job which American women are asked to undertake.

##### How Much Do We Eat?

American civilians buy for consumption about 1,514 pounds of food per person per year—an average of over 4 pounds per person per day—according to a survey made by the Bureau of Human Nutrition and Home Economics in the spring of 1942.

The Army requires more than this—buying about 5 pounds per soldier per day—according to the Quartermaster General's Office.

Despite rationing and some individual shortages, Americans are now, and are likely to remain, the best fed among all the peoples of the great powers. Even under wartime conditions we probably can improve our national health, as Great Britain has, if we put into practice what modern nutritional science has discovered.

### How Much Food Do We Waste?

Analytical studies of garbage collected in 247 cities show that the garbage contains an average of 300 pounds of food per person per year—an average waste of more than 3/4 of a pound of food for each individual every day.

This amounts roughly to 20 percent of the food which is purchased by American householders. Adding such waste as fats and oils that are lost in careless cooking or poured down the sink, and subtracting inedible waste such as eggshells, coffee grounds, melon rinds, etc., we may reasonably estimate that about 15 percent of the edible food brought into American homes is wasted. This is equivalent to about 225 pounds of edible food waste per person per year, or about 3/5 of a pound per person per day. Raymond Pearl, chief statistician of the Food Administration during the first World War, estimated that the wastage of food in the home amounts to 5 percent of the protein, 25 percent of the fats, and 20 percent of the carbohydrates—or an over-all waste of 19 percent of the calories.

In restaurants and other public eating places, waste occurs because of over-stocking, inadequate facilities, overproduction, poor cooking, unskillful handling of food, inexperienced help. Plate waste alone is estimated to average perhaps 6 percent of the food served. And for obvious sanitary reasons, food left on the plate cannot be used for re-serving.

A careful 5-day measurement of food waste in six dormitories of one large mid-western university in 1943, after the introduction of rationing, shows waste ranging from 11 to 19 percent. Studies or estimates of food waste at other colleges, also made in 1943 after the introduction of rationing, show food waste ranging as follows: 8.5 percent, 9.43 percent, 11 percent, 12.4 percent, and 14 percent.

In retail stores there is an estimated over-all food loss of about 3 percent of total sales. Losses in perishable fruits and vegetables are considerably higher. With the total retail store sale of food amounting in 1942 to 15 billion dollars, this means a wastage of some 450 million dollars' worth of food in retail stores alone.

A case study of the New York City Wholesale Produce Market in 1940 indicated a loss of 7 percent in the wholesale phase of distributing fresh fruits and vegetables in that area. This may or may not be representative of losses in wholesale markets in other cities.

Food losses occur also in the transportation of food to market by truck, boat, or train. Food losses in transit may be due to diseased or overripe fruits or vegetables included in the shipment, delays in routing, lack of icing facilities, rough handling, or other causes. Based on damage claims paid by Class I railroads, food losses in transportation would appear to be around 2 percent of the total food moved. Actual losses are doubtless above this level.

Avoidable farm losses sometimes occur when parts of crops are not harvested because prices are too low to cover harvesting and marketing costs, or when lower

grades of produce are not fully utilized after harvest because of low prices. During the past decade (1933-42) such losses averaged about 2 percent of total production of fruits and vegetables. Avoidable losses for individual produce included apples, 5 percent; plums, 3.7 percent; cherries, 3.5 percent; cabbage, 3.7 percent; cantaloups, 3.1 percent; watermelons, 2.5 percent; onions 1.8 percent; and snap beans, 1.6 percent.

There are many other losses in the production of food prior to harvesting, part of which is avoidable. Plant diseases, insects, rodents, and careless cultivation all take a tremendous toll of planted crops. Disease alone in recent years reduced yields of important food crops as much as 15 percent for wheat, 13 percent for corn, 18 percent for potatoes, 12 percent for apples. Insects and rodents together cause damage estimated at close to 2 billion dollars annually.

Such estimates as are available indicate an over-all loss, including both avoidable and unavoidable waste, between the point of harvest on the farm and the point of sale by the retail market or its equivalent of as much as 30 percent for tomatoes, lettuce, cauliflower; 25 percent for cabbage, spinach, celery; 20 percent for fruits such as apples, pears, peaches; 13 percent for oranges and grapefruit. For less perishable commodities such as potatoes, peas, and beets the estimated shrinkage or over-all loss is from 5 to 10 percent. These estimates relate to average conditions and actual losses; they vary, of course, from year to year and area to area, depending upon the particular conditions and difficulties encountered.

Adding together (1) the waste from farm to retail store, and (2) the waste in the home, but excluding losses on the farm prior to harvest, total food losses or over-all reduction in weight between amounts harvested and amounts actually consumed appear to be between 20 and 30 percent. The lower figure of 20 percent probably would represent a conservative estimate of over-all losses in this country, even in 1943.

#### What Kinds of Food Do We Waste?

Home waste appears to be highest in perishables such as fruits and vegetables, and in baked goods. According to an analysis of 160 loads of garbage made by the Sanitary Engineering Research Laboratory of New York University, published in 1941, 23 percent of the garbage consisted of green vegetables, 27 percent of other vegetables, 29 percent of citrus and other fruits, 14 percent of baked goods, and 7 percent of meats, bones, and fish.

A survey made by the Bureau of Agricultural Economics of retail stores in Washington, D. C., in 1940, indicates that spoilage there results in wasting 13.77 percent of the avocados, 6.8 percent of the cauliflower, 7.6 percent of the cabbage, 7.9 percent of the grapefruit, 12.29 percent of the kale greens, 9.2 percent of the peppers, and 7.8 percent of the peaches.

#### What Does This Food Waste Mean?

- (1) In 1942, about 13 percent of our total food production was set aside for military and lend-lease requirements. This figure will be about 25 percent in 1943. The

fact that our over-all food losses are approximately equivalent to our military requirements for 1943 indicates the importance of making every effort to reduce food waste.

- (2) The utmost increase in food production hoped for in 1943, as represented by the goals set for agriculture, is 5 percent. If we could save even a third of our food now wasted we would augment our food supply even more than this goal called for.
- (3) According to the American Bakers Association, we are now eating approximately 2 pounds of bread per week per person. If each home wastes but 1 slice of bread per week, the total would amount to 34 million slices, or approximately 2 million loaves each week. What would the hungry children of Athens or Chungking give for those two million loaves?
- (4) Nutritionists and medical authorities tell us that the American diet is weakest in green vegetables and fruits. How is it we allow so much of these valuable foods to go to waste on our farms and in our stores? How is it almost one-quarter of the food in our garbage dumps consists of green vegetables? (Perhaps we need to learn how to prepare and cook greens as well as we do meats and desserts.)
- (5) The little dabs of butter we leave on our plates in homes and restaurants add up to an enormous aggregate. The saving of only one-half ounce of butter per capita per week would have provided enough butter to have supplied our entire Army last year.
- (6) How much needless food waste is caused by our rules of etiquette? Can we afford, in wartime, to refuse to let Johnny pick up the bone in his fingers and gnaw off the last shreds of meat? Is it really good etiquette not to tip your soup bowl to get the last two or three spoonfuls? With a shortage of fats, what's wrong with using bread to sop up the gravy on the plate? Can we afford to prepare and serve more food than the guests will eat just to keep up the reputation of the "bountiful hostess?"
- (7) "Spare the peel and save the spud." When you peel a potato you throw away one-tenth to one-fourth of its bulk, nearly all its iron, which is concentrated close to the skin, and let much of its vitamin C escape.
- (8) Squeeze your grapefruit dry! Just one cupful of grapefruit juice provides approximately a full day's requirement of vitamin C. When you fail to squeeze out the juice after eating the pulp, as much as a quarter of the value you paid for may be wasted.

#### What Can We Do about It?

This statement describes food waste of two kinds: preventable and nonpreventable. Obviously we cannot completely eliminate the \$189,000,000 of food damage done every year by rats, nor the \$1,600,000,000 of damage done annually by insects. We cannot prevent some blight and rot. We cannot eliminate all bruising and injury of perishable food products in shipment and storage. But much of this wastage can be eliminated by vigorous action. And most of the plate waste in homes and restaurants can be stopped. Food waste in home storage and preparation can be considerably reduced. Retail store loss of food caused by overhandling can be controlled. Food

wastage due to prejudice and extravagant eating habits is subject to control. If we can save no more than a quarter or a third of the 20 to 30 percent of our food supply that is now lost between harvest and garbage pail, the result would be immediately apparent in larger food reserves. Avoidable food waste is, in fact, the largest and most economical extra food supply available to us. This is a war food job in which everyone can share.

#### APPENDIX B:

#### CONSERVATION, COOKING, AND NUTRITION PUBLICATIONS FOR HOMEMAKERS

Do you want to feed your family in the modern way? Listed below are some selected publications which may be especially interesting to the women who participate in the discussion on how to save food.

Prepared for today's busy homemaker, these publications are brief, clear, easy to read and will help answer some of the questions raised during the discussion meetings. Many are illustrated; all are packed with suggestions on how to:

- Serve more nutritious meals
- Lower your food costs
- Reduce food waste

Select and order the publications you want. They are available without charge.

A Fruit and Vegetable Buying Guide for Consumers . . . . .	MP 167
Cook pork and its products thoroughly . . . . .	Use title
Cooking with Soya Flour and Grits . . . . .	AWI-73
Dried Beans & Peas in Wartime Meals . . . . .	AWI-47
Dried Fruits in Low-Cost Meals . . . . .	Use title
Egg Dishes at Low-Cost . . . . .	Use title
Fats and Oils for Cooking and Table Use . . . . .	L 204
Fats in Wartime Meals . . . . .	AWI-34
Family Food Plans for Good Nutrition . . . . .	AWI-78
Fight Food Waste in the Home . . . . .	AWI-3
Food for Children . . . . .	F 1674
Green Vegetables in Wartime Meals . . . . .	AWI-54
Homemade Bread, Cake, and Pastry . . . . .	F 1775
Home Storage of Vegetables and Fruits . . . . .	F 1939
Meat for Thrifty Meals . . . . .	F 1908
National Wartime Nutrition Guide . . . . .	NFC-4
99 ways to share the meat . . . . .	AWI-13
Potatoes in Low-Cost Meals . . . . .	Use title
Poultry Cooking . . . . .	FB 1888
Preservation of Vegetables by Salting or Brining . . . . .	F 1932
Root Vegetables in Wartime Meals . . . . .	AWI-39
Storage of vegetable seeds . . . . .	L 220
Victory Gardens . . . . .	MP 483
Vitamins from Farm to You . . . . .	AWI-2
Wartime Canning of Fruits and Vegetables . . . . .	AWI-41
Why Feed Insects? - Protect Dried Foods in Your Home . . . . .	AWI-64

Order by number and title. Print name and address to which the publications are to be sent. Mail order to:

Office of Information  
United States Department of Agriculture  
Washington 25, D. C.